



Figure 2.1. Descartes' representation of the nerve transmission in reflex action. Animal spirits traverse the path from the sense organs to the brain and back, resulting in motion. Reprinted from René Descartes (1664), *L'Homme*. Paris: Charles Angot.

activities of the natural world as workings of a mechanism, this tradition placed principal emphasis on *laws* of nature. Ronald Giere (1999), among others, has proposed that this view was a product of the theological perspective of certain early modern philosophers – those who conceived of the principles governing the natural world on the model of civil laws, albeit with God, not humans, as the lawgiver. Appeal to a lawgiver continued as a feature of this tradition, but what gave the law-based tradition traction was that scientists learned to describe regularities in the universe economically and precisely in laws that were appealed to in explaining particular phenomena. The perspective is clearly manifest in Newton, who posited forces in nature to explain phenomena from the terrestrial to the celestial. His well-known three laws of motion are an exemplar of this approach, but he pursued the approach more generally. To explain the reflection of light, for example, he posited a repulsive force between a light ray emitted and its source as soon as a ray left the area of attraction. Vaporization was similarly attributed to a repulsive force. Moreover, Newton suggested a systematic relationship between